

## REMARKS

Claims 1-4 and 6-7, and 10 are pending in the present application. Claim 1 has been amended. No claims have been canceled or added, leaving Claims 1-4, 6-7, and 10 for further consideration in the present amendment. Reconsideration and allowance of the claims is respectfully requested in view of the following remarks.

### Claim Rejections Under 35 U.S.C. § 112

Claims 1-4, 6-7, and 10 have been rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. In particular, the Examiner believes that the amendment to the claims to include the limitation of conducting the coating step prior to any other semiconductor manufacturing process is not supported by the original disclosure. Applicants have amended the claims to remove this limitation, thus rendering this rejection of the claims moot.

In view of the foregoing, Applicants respectfully request the withdrawal of the 35 U.S.C. §112 rejection.

### Claim Rejections Under 35 U.S.C. § 102

Claims 1, 4, 7, and 10 have been rejected under 35 U.S.C. § 102(b), as allegedly being anticipated by U.S. Patent No. 4,144,634 to Chang *et al.* (hereinafter referred to as "Chang"). Moreover, Claims 1, 4, 6, 7, and 10 have been rejected under 35 U.S.C. § 102(e), as allegedly being anticipated by U.S. Patent No. 6,489,616 to Giedd (hereinafter "Giedd"). Applicants respectfully traverse these rejections.

To anticipate a claim under 35 U.S.C. §102, a single source must contain all of the elements of the claim. *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q.2d 1766, 1768 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 1007 (1988).

Independent Claim 1 has been amended to include the limitation that "coating the semiconductor material surface is subsequent to implantation of dopant ions into the surface

without first diffusing the dopant ions or sputtering the dopant ions” (emphasis added).

Applicants assert that this addition to Claim 1 meets the written description requirement of 35 U.S.C. § 112, first paragraph, for the following reason. To comply with the written description requirement of 35 U.S.C. § 112, first paragraph, each claim limitation must be expressly, implicitly, or inherently supported in the originally filed disclosure. When an implicit limitation in a claim “is not present in the written description whose benefit is sought it must be shown that a person of ordinary skill would have understood, at the time the patent application was filed, that the description requires that limitation.” *Hyatt v. Boone*, 146 F.3d 1348, 1353, 47 USPQ2d 1128, 1131 (Fed. Cir. 1998). See also *In re Wright*, 866 F.2d 422, 425, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989). In a recent decision, the Board of Patent Appeals and Interferences (hereinafter “Board”) held that the addition of the phrase that a decomposition be conducted “in the absence of a catalyst” is supported (i.e., not new matter) even though the specification did not literally refer to an absence of a catalyst. *Ex Parte Parks*, 30 USPQ2d 1234, 1236 (Bd. Pat. App. & Int’f 1993). The Board stated that “[t]hroughout the discussion [of the process] which would seem to cry out for a catalyst if one were used, no mention is made of a catalyst.” *Id.*

Based on the specification of the present application, a person of ordinary skill in the art would have understood that neither dopant diffusion nor removal of dopants by sputtering is performed before the cleaning method of claim 1. In particular, paragraphs 21-25 of the specification describe applying a non-aqueous organic solvent to a semiconductor substrate to remove dopant ions from undersired areas of the substrate surface. Throughout this discussion which would seem to cry out for the disclosure of dopant diffusion or dopant removal by sputtering if either of these processes are performed, neither of these processes are mentioned.

Turning now to the cited references, Chang fails to teach the removal of dopant ions that have been implanted into a surface but instead teaches the removal of dopant ions formed during the epitaxial growth of GaAs. See, e.g., the Example in column 5 of Chang, which discloses cleaning the surface of an epitaxially grown GaAs sample. There is no

mention in Chang of implanting the dopants in the GaAs surface. Further, a person of ordinary skill in the art would know that epitaxially growing the GaAs is a different process from the implantation of dopants.

Giedd pertains to an infrared detector that includes a sensor having an amorphous surface layer containing organic carbon and a high dopant concentration and an underlying polymer layer. Giedd describes an implantation process that is followed by diffusing most or essentially all of the target dopant layer into the polymer layer or sputtering it off the polymer layer surface. Giedd further discloses removing any remaining dopant by, for example, cleaning the surface with a solvent such as acetone. See, e.g., column 16, lines 3-11. As such, Giedd fails to teach performing this cleaning of the surface after the implantation process without first diffusing the dopant ions or sputtering the dopant ions.

Accordingly, independent Claim 1 and dependent Claims 4, 6-7, and 10, which depend therefrom, are not anticipated by Chang or Giedd. Applicants therefore respectfully request the withdrawal of the 35 U.S.C. § 102 rejections.

#### Claim Rejections Under 35 U.S.C. § 103

Claim 3 has been rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over any one of Chang and Giedd. Further, Claims 1-4, 6-7, and 10 have been rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over the state of the prior art admitted by the Applicants in view of Giedd. Applicants respectfully traverse these rejections.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a *prima facie* case of obviousness requires that all elements of the invention be disclosed in the prior art. *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

The cited art, taken individually or in combination, fails to teach or suggest that a semiconductor surface can be cleaned with a solvent subsequent to implantation of dopant

ions into the surface without first diffusing the dopant ions or sputtering the dopant ions, as recited in Claim 1.

As discussed previously, Chang discloses cleaning the surface of GaAs after forming the GaAs by epitaxial growth rather than after implanting dopant ions into the surface. Chang in no way suggests that dopant ions are implanted before said cleaning. In contrast to the above limitation of Claim 1, Giedd specifically teaches diffusing or sputtering previously implanted dopant ions before removing any remaining dopants by cleaning the underlying surface with a solvent.

In view of the foregoing, the cited art fails to render obvious independent claim 1 and dependent claims 2-4, 6-7, and 10, which depend therefrom. Applicants therefore respectfully request the withdrawal of the 35 U.S.C. § 103(a) rejections.

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It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and allowance is requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 09-0458 maintained by Assignee.

Respectfully submitted,

CANTOR COLBURN LLP  
Applicants' Attorneys

By: /Michelle L. Henderson/  
Michelle L. Henderson  
Registration No. 42,654

Date: August 8, 2007  
Customer No.: 29371  
Telephone: (404) 607-9991